The Journal of Educational Research

ISSN: 0022-0671 (Print) 1940-0675 (Online) Journal homepage: http://www.tandfonline.com/loi/vjer20

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**To cite this article:** W. Warren Kallenbach & Meredith D. Gall (1969) Microteaching versus Conventional Methods Training Elementary Intern Teachers 1, The Journal of Educational Research, 63:3, 136-141, DOI: 10.1080/00220671.1969.10883958

**To link to this article:** http://dx.doi.org/10.1080/00220671.1969.10883958

Published online: 08 Jan 2015.

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THE JOURNAL OF EDUCATIONAL RESEARCH
(Volume 63, Number 3, November 1969)

# Microteaching Versus Conventional Methods in Training Elementary Intern Teachers[1]

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## ABSTRACT

**The purpose of this study was to determine the effectiveness of elementary school interns trained in a summer program by the Stanford microteaching approach as compared with interns who received conventional classroom observation and student teaching experience. Contrary to expectation based on previous research findings, microteaching was not found to result in significantly higher ratings of teacher effectiveness either immediately after or a year after training. However, it was concluded that microteaching is an effective training strategy since it achieves similar results when compared with conventional training methods but in only one-fifth the time and with fewer administrative problems. An incidental finding was that pretraining ratings of teaching performance based on a brief videotaped lesson were generally good predictors of later ratings of teaching effectiveness.**

THE CONCEPT of "microteaching" and the techniques for its implementation first appeared as part of Stanford University's experimental teacher education program about 5 years ago (5). Since then, microteaching has attracted the interest of an increasing number of educators concerned with the improvement of teacher education. Borg (3), for example, used the microteaching approach in developing a program to improve classroom discussion skills of inservice teachers. His research findings to date provide a dramatic demonstration of microteaching's efficacy in changing teacher behavior. In addition, encouraging results have been obtained when elements of the microteaching approach, such as use of portable videotape recorders to record behavior and self-viewing of one's own behavior, have been employed for training purposes in preservice teacher education (7) and in other fields such as counseling (4) and psychotherapy (10).

"Microteaching" derives its name from the fact that it is an approach to training teachers in which "a scaled down teaching encounter in class size and class time" (1:1) is established. The basic microteaching model involves four steps, though variations of this pattern have been investigated (9): (a) the intern studies a specific teaching skill; (b) he applies the skill in a 5- to 10-minute videotaped lesson taught to four or five pupils; (c) he receives feedback from his supervisor as they view the videotape together; and (d) the intern replans the same lesson and teaches it to another small group of pupils. Among the advantages claimed for the microteaching approach, compared to conventional teacher training methods, are these: the complexities of teaching are simplified and made specific; it is possible to achieve greater control in selecting the types of pupils whom the intern "microteachers"; substantial reductions in time and travel for both staff and interns are achieved; and, since the intern's performance is preserved on videotape, the intern and supervisor do not need to rely on memory in reviewing the lesson.

Though these considerable advantages have been claimed for microteaching, there has been little research as yet to determine whether microteaching is equivalent or superior to a conventional teacher-training program in producing effective teachers. Allen and Fortune (2) suggest that microteaching is a superior approach. They found that Stanford interns trained by microteaching methods for 8 weeks during the summer earned significantly higher ratings on teaching effectiveness at the end of their training than did their peers who received separate instruction and teacher aide experience. The superiority of the microteaching group was highlighted further by the fact that instruction using microteaching techniques required an average of less than 10 hours a week of the intern's time whereas the group trained by conventional techniques spent between 20 and 25 hours per week.

The present study was conducted for the purpose of gathering more data relevant to the issue of whether interns trained by microteaching have superior classroom performance when compared with interns conventionally trained. The research design used for this purpose is similar to that employed in the study by Allen and Fortune but with two additions. First, whereas their study assessed post-training teaching competence by performance in a microteaching situation, the present study assesses teaching competence of interns both in this "scaled-down" situation and in an actual classroom situation. Second, as in their study, teaching competence is assessed after a summer period of training but in addition the subjects are assessed at the beginning and end of their first year of intern teaching. Also in the Allen and Fortune study teaching performance was evaluated by means of the Teacher Demonstration Rating (TDR) whereas the present study employed the Stanford Teacher Competence Appraisal Guide (STCAG), which was developed from the TDR. In addition, their study involved secondary school interns, whereas the subjects in the present study were all elementary school interns.

## Method

### *Subjects*

The subjects for this study were the students selected by the Education Department of San Jose State College to begin training in the Elementary Teacher program during the summer of 1966. Three subjects were dropped from the study for various reasons: one was unable to participate in the fall intern teaching program; another was unable to teach the videotaped Diagnostic Lesson at the proper time; and a third subject had participated in an earlier microteaching experiment. The majority of the subjects were entering the program directly from or soon after completing college, though there were some who had worked in other fields or who had been housewives for many years before deciding to teach in elementary schools.

Prior to the 1966 summer training program, each of the thirty-seven subjects was randomly assigned to one of two training groups, Microteaching or the regular Student Teaching Program. Nineteen subjects were placed in the Microteaching group and eighteen subjects in the Student Teaching group. Table 1 presents the mean age, sex distribution, mean undergraduate gradepoint, and marital status of the Microteaching and Student Teaching groups. The two groups did not differ significantly from each other on any of these variables. Both groups took the same course work, lasting 10 weeks from June to September, in methods, curriculum, and learning theory. Attendance in these classes required about 8 hours a week of the interns' time. The remainder of the interns' time was spent gaining practicum experience through the Microteaching or Student Teaching Program or in preparation for coursework.

**Table 1.—Age, Sex, Gradepoint, and Marital Status of the Microteaching and Student Teaching Groups**

| | Microteaching (N = 19) | Student Teaching (N = 18) | |
|---|---|---|---|
| **Age** | | | |
| $\bar{x}$ | 27.36 | 26.90 | $t = .18$ |
| S.D. | 8.19 | 7.34 | |
| **Sex** | | | |
| Male | 4 | 3 | |
| Female | 15 | 15 | |
| **Undergraduate Gradepoint** | | | |
| $\bar{x}$ | 2.90 | 2.91 | $t = .09$ |
| S.D. | .31 | .38 | |
| **Marital Status** | | | |
| Single | 3 | 1 | |
| Married | 15 | 17 | |
| Widowed/Divorced | 1 | 0 | |

The Student Teaching group was placed in several nearby school districts which had summer-school programs. Each subject observed, aided, and taught 10 hours a week for an average of 5 weeks in the classroom of a cooperating teacher whose pupils were at the same or a similar level as those that the subject would teach in the fall, The total program required about 125 hours of the average subject's time, if an estimate of 3 hours a day for lesson preparation and travel to and from the school is included. Subjects in this program received limited faculty and district supervision. They also attended a class with the Microteaching group in which specific teaching skills in the areas of lesson preparation and presentation and teacher–pupil rapport were discussed. Both groups were encouraged to use these skills in their teaching, but only the Microteaching group was told to prepare a short lesson the next day in which the skill would be practiced. This lesson was taught to 4 or 5 students, predominantly at the fifth or sixth grade level, although occasionally younger pupils were used. Subjects reviewed the videotapes of their lesson with a supervisor experienced in microteaching methods, and in addition received written evaluations from the students, who used a modified form of the STCAG. In the same session the subjects replanned and retaught the lesson to a different group of students. Microteaching subjects participated in these sessions, which typically lasted 1 hour, once a week over a period of 7 weeks. If an estimate of 2 hours for lesson preparation for each microteaching session is included, then this program required about 20–25 hours of the average student's time, which is about one-fifth the time required to complete the Summer Student Teaching Program.

### *Assessments of Teaching Competence*

In June of 1966, prior to the beginning of the

Summer training programs, each subject was required to teach a 5-minute Diagnostic Lesson which was videotaped. Each subject prepared the lesson beforehand, on a topic of his own choice, and taught it in the College Microteaching Studio to a group of four to six pupils who were in the fifth and sixth grades in nearby school districts. The purpose of this procedure, developed at Stanford University (2), was to obtain a baseline sample of each subject's teaching behavior prior to the training programs. In the last week of the Summer program, each subject taught a 5-minute Criterion Lesson, which was similar to the Diagnostic Lesson in format, type of pupils, and location. In addition, these two sets of videotaped lessons (a total of 76 lessons) were transferred in random order onto new videotapes to insure that judges would make their ratings of teaching competence blind with respect to each subject's training group and to whether the lesson was taught before or after the Summer programs.

Two raters experienced in the use of the STCAG made independent ratings of the teaching effectiveness demonstrated in the Diagnostic and Criterion Lessons. The STCAG is a form developed at the Stanford School of Education (2) on which raters assess seventeen dimensions of teaching competence in the areas of lesson planning and presentation, use of measurement techniques to evaluate learning, and community and professional participation. For purposes of this study, all the dimensions except the four relating to community and professional participation were rated on a 7-point scale; and these ratings were averaged to yield a single rating of overall teaching competence. One of the raters was an elementary school principal; the other was a college professor whose main work is the instruction and supervision of elementary student teachers. Owing to an unfortunate loss of some Diagnostic and Criterion Lesson videotapes, the raters were not able to evaluate all seventy-six lessons. A total of twenty lessons were unavailable, and these unavailable lessons were distributed among the two training groups and pre-post-training conditions as follows: Microteaching, Pre-Summer (N=6); Microteaching, Post-Summer (N=6); Student Teaching, Pre-Summer (N=5); Student Teaching, Post-Summer (N=3). Since the videotaped lessons were transferred to the final videotape in random order, it may be assumed that there was no systematic bias in the loss of these lessons.

Additional assessments of teaching competence were made after the subjects began teaching in the schools during the 1966–1967 academic year. In the fall of 1966 the senior author and the director of the elementary intern teaching program at San Jose State College observed together each subject's classroom teaching for about half an hour, and then made independent ratings of their teaching competence by means of the STCAG. At about the same time another faculty member rated the subjects' teaching competence by means of the Instrument for the Observation of Teaching Activities (IOTA—8). The IOTA, which requires about an hour and a half of classroom observation and personal interview of the teacher to complete, is based on the model of teacher competence defined by the Teacher Education Commission of the California Teachers Association (6). In the spring of 1967 the same faculty member rated the teaching competence of the students again by means of the IOTA. In addition, another faculty member, experienced in the use of the IOTA and in the instruction and supervision of elementary school student teachers, independently rated about half of the students on a random basis.

## Results

The various inter-rater reliability coefficients are reported in Table 2. Respectable levels of agreement were found for Post-Summer STCAG and Spring IOTA. Since the first rater for Spring IOTA observed only eighteen subjects whereas the second rater observed thirty-seven subjects, only the scores of the second rater were used so as to secure the largest possible number of students on whom to make comparisons of the two training methods.

It is of interest to note that the reliability achieved by the team evaluating the Pre-Summer Diagnostic Lessons is substantially lower than the same team's reliability for the Post-Summer Diagnostic Lessons, although the difference in correlation coefficients is not statistically significant $(z = 1.15)$. Scores for both raters on the Pre- and Post-Summer Diagnostic Lessons were averaged to form a single set of scores. The lowest reliability coefficient was obtained between the two raters who assessed the students' Fall class-

**Table 2.—Inter-Rater Reliability on Observations of Teaching Performance**

| Observation | N | $r =$ [a] |
|---|---|---|
| STCAG, Pre-Summer Diagnostic Lesson, 1966 | 29 | .56 |
| STCAG, Post-Summer Criterion Lesson, 1966 | 31 | .74 |
| STCAG, Fall Classroom Teaching, 1966 | 32 | .47 |
| IOTA, Spring Classroom Teaching, 1967 | 18 | .80 |

**NOTE—Two raters for each observation.**

[a] **For all coefficients listed here, $p < .01$.**

**Table 3.—Intercorrelations of Teaching Performance Observations**

| Observation | 1. | 2. | 3. | 4. | 5. | 6. |
|---|---|---|---|---|---|---|
| 1. STCAG, Pre-Summer Diagnostic Lesson, 1966 | -- | .14 | .51† | .42* | .28 | .47† |
| 2. STCAG, Post-Summer Diagnostic Lesson, 1966 | 29 | ----- | .28 | .10 | .00 | .17 |
| 3. STCAG, Fall 1966 (Rater 1) | 28 | 30 | ------ | .47† | .41* | .54† |
| 4. STCAG, Fall 1966 (Rater 2) | 25 | 27 | 32 | ------ | .28 | .47† |
| 5. IOTA, Fall 1966 | 29 | 31 | 36 | 32 | ------ | .59† |
| 6. IOTA, Spring 1967 | 29 | 31 | 36 | 32 | 37 | ---- |

**NOTE:** The numbers above the diagonal are the correlation coefficients; the numbers below it are the respective N's.
$^*p < .05$.
$^\dagger p < .01$.

room performance by means of the STCAG. This finding may be a reflection of the fact that the two raters had both achieved respectable levels of reliability with other raters in the use of this instrument, but they did not have an opportunity before this study to check their own interrater reliability. In view of these circumstances, it was decided to treat the STCAG scores of each rater separately rather than to average them.

Table 3 shows the intercorrelations of the various ratings of teaching performance. Inspection of these coefficients reveals that the STCAG ratings of Pre-Summer Diagnostic Lessons, though based only on a 5-minute sample of teaching behavior before the subjects had any training in teaching skills, is a fairly good predictor of the later ratings of classroom teaching effectiveness, with the exception of the Fall IOTA ratings. In addition, on the basis of the correlations between Spring IOTA and the other ratings, it appears that there is a sizable degree of stability in teaching effectiveness over a 1-year period. It is possible that these coefficients would have been of greater magnitude if the same raters and rating instrument had been used for all observations.

Comparisons of Microteaching and Student Teaching groups are presented in Table 4. Statistical analysis indicates that the two groups do not differ from each other on any of the post-training ratings of teaching effectiveness. That is, the data of this study do not provide any evidence that microteaching is either superior or inferior to a conventional student teaching program in terms of producing effective teachers, when effectiveness is measured under a variety of conditions: by different rating instruments, in a laboratory or classroom setting, by different raters, and at the beginning and end of a year's teaching experience.

An unexpected finding was that the two groups did differ significantly from each other on the pretraining measure (STCAG Pre-Summer Diagnostic Lesson). Therefore, an analysis of covariance was made to determine whether the Microteaching and Student Teaching groups would differ significantly from each other after equating both groups on the ratings of pre-training teaching effectiveness. The analysis, presented in Table 5,

**Table 4.—Microteaching and Student Teaching Groups Compared on Observations of Teaching Performance**

| Observation | | Microteaching | Student Teaching | *t* |
|---|---|---|---|---|
| STCAG, Pre-Summer Diagnostic Lesson, 1966 | N | 14 | 15 | |
| | x̄ | 2.93 | 3.37 | 2.20* |
| | S.D. | 0.53 | 0.51 | |
| STCAG, Post-Summer Criterion Lesson, 1966 | N | 14 | 17 | |
| | x̄ | 3.12 | 3.07 | .22 |
| | S.D. | 0.55 | 0.67 | |
| STCAG, Fall 1966 Rater 1 | N | 19 | 17 | |
| | x̄ | 3.69 | 3.82 | .57 |
| | S.D. | 0.65 | 0.69 | |
| STCAG, Fall 1966 Rater 2 | N | 15 | 17 | |
| | x̄ | 3.53 | 3.54 | .05 |
| | S.D. | 0.52 | 0.53 | |
| IOTA, Fall 1966 | N | 19 | 18 | |
| | x̄ | 3.00 | 2.92 | .56 |
| | S.D. | 0.42 | 0.42 | |
| IOTA, Spring 1967 | N | 18 | 19 | |
| | x̄ | 3.05 | 3.08 | .15 |
| | S.D. | 0.71 | 0.43 | |

$^*p < .05$.

**Table 5.—Microteaching and Student Teaching Groups Compared on Observations of Teaching Performance After Adjusting for Pre-Training Performance Differences**

Analysis of Covariance

| Observation | Source | df | Mean Square | F |
|---|---|---|---|---|
| STCAG, Post-Summer Diagnostic Lesson, 1966 | Treatment | 1 | .00 | .00 |
| | Error | 24 | .40 | |
| STCAG, Fall Teaching 1966, Rater 1 | Treatment | 1 | .02 | .05 |
| | Error | 24 | .35 | |
| STCAG, Fall Teaching 1966, Rater 2 | Treatment | 1 | .00 | .02 |
| | Error | 24 | .20 | |
| IOTA, Fall Teaching 1966 | Treatment | 1 | .02 | .09 |
| | Error | 24 | .20 | |
| IOTA, Spring Teaching 1967 | Treatment | 1 | .01 | .05 |
| | Error | 24 | .29 | |

NOTE—For purposes of this analysis, the N for each comparison was the same (14 Microteaching Ss; 13 Student Teaching Ss).

indicates that even with this adjustment there is no significant difference between the two types of training methods on any of the post-training measures of teaching effectiveness.

## Discussion

The purpose of this study was to replicate Allen and Fortune's study in which it was found that teacher interns trained by the microteaching approach earned significantly higher ratings of teaching effectiveness than did interns trained in the regular student teaching program. The findings show that the two groups trained by one or the other method did not differ significantly from each other on any of the post-training measures of teaching effectiveness.

Several conditions may account for the difference in results between the two studies. For example, the Allen and Fortune study involved a highly selected group of interns, whereas subjects in this study comprised a less highly selected group. Also, the former study was of interns preparing to teach at the secondary level, whereas this study was of interns preparing to teach at the elementary level. These differences between the two studies in sample composition, together with the disparity in findings, suggest the possibility that microteaching is a more effective teaching strategy than conventional training methods for some intern groups but not for others. It should be noted, too, that though the authors attempted to follow the guidelines established by the Stanford research group, there were probably unspecifiable differences in the application of microteaching methods in the two studies which contributed to the differences in findings. More research using a variety of teacher intern groups, criterion ratings, and microteaching instructors is needed to determine the circumstances under which microteaching will achieve superior results.

Although microteaching was not found to be superior to conventional training methods in its effect on teachers' classroom performance, the authors believe it would be misleading to conclude that microteaching represents little real or potential improvement in training teachers. Instead, the authors interpret the findings as indicating that microteaching is a superior training strategy since it achieves similar results when compared with conventional training methods in only one-fifth the time. In addition to economy of time, microteaching involves practically none of the administrative problems incurred by faculty and interns in arranging for conventional classroom observation and teacher aide experience.

Another factor that should enter into an evaluation of microteaching's merits is the fact that it is an "open" methodology. That is, new components can be and are being investigated to determine whether they increase microteaching's effectiveness. Orme (9), for example, found that the inclusion in the microteaching format of films of model teachers demonstrating desirable teaching techniques led to increased effectiveness in intern classroom performance. Model teacher films are currently being used with promising results in microteaching courses (called "minicourses") being developed at the Far West Laboratory for Educational Research and Development (3). Other studies may suggest additional ways in which the microteaching format can be strengthened. Certainly one line of development which will improve microteaching is the further definition of specific teaching skills to replace the existing vague generalizations that serve as criteria of good teaching. Thus far, the main emphasis by workers in this area has been on the definition and training of lecture and discussion skills. In the future we may expect to see microteaching expanded to cover the training of teaching skills such as are involved in individualized instruction and classroom management. As these skills become operationally defined, not only will the effectiveness of microteaching improve, but there will be the additional advantage of more objective assessment of training outcomes than are provided by present rating instruments.

An incidental finding of the study was that ratings of teaching performance based on a brief videotaped lesson were generally good predictors of later ratings of teaching effectiveness. In view of the need for predictors of teaching effectiveness, this finding has particular significance and deserves further study. Furthermore, the fact that performance in a microteaching situation predicts performance in the classroom situation indicates that while microteaching "scales down" the classroom situation, it does not distort it. That is, microteaching behavior is not unique to that situation but is representative of the teacher's actual classroom behavior. This fact lends support to the claim by the proponents of microteaching that skills learned in a microteaching situation will generalize to the classroom situation.

### FOOTNOTES

1. This study was supported by the Bureau of Research, United States Office of Education (Grant No. OEG 4-6-061303-1885).
2. This paper is based on research conducted while the senior author was at San Jose State College. The authors would like to thank Dr. Robert Ramonda and Mrs. Norma Millar, on the faculty and summer faculty of that institution, respectively, for their assistance in planning and conducting the study.

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